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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,875	03/15/2002	Qian Yu	51519-P001US-10203244	5395

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EXAMINER

LEE, DAVID J

ART UNIT PAPER NUMBER

2613

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/099,875

Applicant(s)

YU ET AL.

Examiner

David Lee

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-19 is/are allowed.
- 6) ☒ Claim(s) 1,2,7-9,10-22 is/are rejected.
- 7) ☒ Claim(s) 3-6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 2 rejected under 35 U.S.C. 102(b) as being anticipated by Heismann et al. (US Patent No. 5,327,511).

Regarding claim 1, Heismann discloses a method of polarization-scrambling an incoming optical signal (see Fig. 1; see also Abstract), comprising the steps of: causing a variation of the SOP as a function of time for an incoming optical signal that has an unknown SOP to produce a polarization-scrambled optical signal (note the polarization modulator 101 of Fig. 1 and its input signal 102 and its output signal 103; see col. 6, lines 25-36: the state of polarization of the input signal has an “arbitrary” orientation, which is understood as an “unknown” orientation, and the polarization modulator 101 modulates the signal to produce a polarization-scrambled optical signal 103; see also Abstract and col. 2, lines 60-67); and periodically changing said SOP of said polarization-scrambled optical signal with time, such that said periodically changing polarization-scrambled optical signal covers approximately an entire Poincare sphere surface during each time period of said periodic changing over a plurality of periods (note the polarization controller 104 of Fig. 1 and its input signal 103 and output signal 109; see col. 3,

lines 58 to col. 4, line 3 and col. 6, lines 25-50: note that the SOP is modulated “periodically between states”, wherein the polarization control 105 transforms the sequence of states of polarization of the modulated optical signal; note also that the entire circle of the Poincare sphere is continuously traced).

Regarding claim 2, Heismann discloses that the SOP is distributed substantially uniformly over said entire Poincare sphere during each time period (see col. 2, lines 60-63).

Claims 7-9 and 20-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Suh et al. (US Pub. No. 2002/0109901 A1).

Regarding claim 7, 9 and 20, Suh discloses a system for real-time compensation of the performance degrading effect induced by PDL in a multi-wavelength fiber-optic communication system (fig. 16A), said system comprising: a first optical polarization controller having an input port operable to receive an input optical signal having a polarization state (fig. 16A, PC section 752), said first optical polarization controller being operable to adjust the polarization state of the input optical signal to produce a first intermediate optical signal (fig. 17, polarization scrambler 820); a first optical element coupled to the first polarization controller (fig. 16A, birefringent element 758) and operable to receive and to cause a fixed PDL (a natural limiting factor in high-capacity WDM systems; note that the fiber itself is fixed which produces a fixed PDL with respect to wavelength) in the first intermediate optical signal to produce a second intermediate optical signal; a second optical polarization controller (fig. 16A, PC section 756) coupled to said first optical element, the second optical polarization controller being operable to adjust the polarization state of the second intermediate optical signal to produce a third intermediate optical

Art Unit: 2613

signal (fig. 17, polarization scrambler 820; see also paragraphs 0031 and 0140); and a second optical element substantially identical to said first optical element (fig. 16A, 758 on right side of PC section 756), the second optical element being operable to receive and to cause a fixed PDL in the third intermediate optical signal (PDL is a natural limiting factor in high-capacity WDM systems; ; note that the fiber itself is fixed which produces a fixed PDL with respect to wavelength) to produce an output optical signal.

Regarding claims 8 and 21, Suh discloses that the system has an adjustable PDL (paragraph 0155: the adjustability feature in the system as described by Suh can be constructed according to a PDL controller).

Regarding claim 22, Suh discloses that the system comprises a recirculating optical loop (fig. 15: feedback loop, fig. 16A: the recirculating loop is incorporated with the feedback sensor 758 and circulates throughout the system).

Allowable Subject Matter

2. Claims 10-19 are allowed.

Claims 3-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

3. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new grounds of rejection.

Applicant's arguments with respect to claims 7-9 and 20-22 have been fully considered but they are not persuasive.

Regarding claims 7 and 20, Applicant argues that Suh fails to teach the polarization dependent loss (PDL) is fixed. However, it is noted that since PDL is a natural limiting factor of the fiber in the polarization dependent system of Suh and since the fiber itself does not change, a signal traveling through the fiber will experience a fixed amount of PDL relative to wavelength. Additionally, Applicant argues that Suh does not teach that the first and second elements are substantially identical. Examiner disagrees. Suh applies the roman numeral "758" to both elements (see Fig. 16A), both elements are drawn alike (i.e. – as a loop), and both elements are referred to as the same component. Therefore, the components both referred to and drawn alike as "758" are understood as substantially identical.

Furthermore, regarding the polarization control sections 752 and 756 of Fig. 16A, it is noted that the polarization states are controlled and this is understood as "adjust[ing] the polarization state." Specifically, Suh teaches:

FIG. 16A shows an illustrative PMD compensator for use with coherent dithering method 700. Compensator 750 includes initial polarization transformer 752 (which may contain multiple polarization transformation control sections), PMD generator 754, feedback sensor 758, demultiplexer 760, and optical distortion analyzer and controller 762. (paragraph 0140)

Furthermore, Suh teaches that the polarization states are adjusted by "varying the ratio of the vertical electric field to the horizontal electric field" (see paragraph 0031). This controls the direction of the principal axis, which provides the polarization control as illustrated in Fig. 16A.

MPEP § 904.01 recites:

"The breadth of the claims in the application should always be carefully noted; that is, the examiner should be fully aware of what the claims do not call for, as

Art Unit: 2613

well as what they do require. During patent examination, the claims are given the broadest reasonable interpretation consistent with the specification. See *In re Morris*, 127 F.3d 1048, 44 USPQ2d 1023 (Fed. Cir. 1997).

In view of this, it is the Examiner's position that Suh broadly and reasonably teaches the limitation that the first and second elements are substantially identical and the limitation that the elements cause a fixed polarization dependent loss.

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lee whose telephone number is (571) 272-2220. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2613

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER